

Claims

What is claimed is:

- 5 1. A computer-implemented method for identifying patterns in data, the method comprising:
 - (a) inputting into a classifier a training set having known outcomes, the classifier comprising a decision function having a plurality of weights, each having a weight value, wherein the training set comprises features corresponding to the data and wherein each feature has a corresponding weight;
 - 10 (b) optimizing the plurality of weights so that classifier error is minimized;
 - (c) computing ranking criteria using the optimized plurality of weights;
 - (d) eliminating at least one feature corresponding to the smallest ranking criterion;
 - 15 (e) repeating steps (a) through (d) for a plurality of iterations until a subset of features of pre-determined size remains; and
 - (f) inputting into the classifier a live set of data wherein the features within the live set are selected according to the subset of features.
- 20 2. The method of claim 1, wherein the classifier is a support vector machine.
3. The method of claim 1, wherein the classifier is a soft margin support vector machine.
- 25 4. The method of claim 1, wherein the ranking criterion corresponding to a feature is calculated by squaring the optimized weight for the corresponding feature.

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5. The method of claim 1, wherein the decision function is a quadratic function.

5 6. The method of claim 1, wherein step (d) comprises eliminating a plurality of features corresponding to the smallest ranking criteria in a single iteration of steps (a) through (d).

10 7. The method of claim 1, wherein step (d) comprises eliminating a plurality of features corresponding to the smallest ranking criteria in at least the first iteration of steps (a) through (d) and in later iterations, eliminating one feature for each iteration.

15 8. The method of claim 1, wherein step (d) comprises eliminating a plurality of features corresponding to the smallest ranking criteria so that the number of features is reduced by a factor of two for each iteration.

9. The method of claim 1, wherein the training set and the live set each comprise gene expression data obtained from DNA micro-arrays.

20 10. The method of claim 1, further comprising pre-processing the training set and the live set so that the features are comparably scaled.